



# Einstein-Cartan-Evans A New View on Nature

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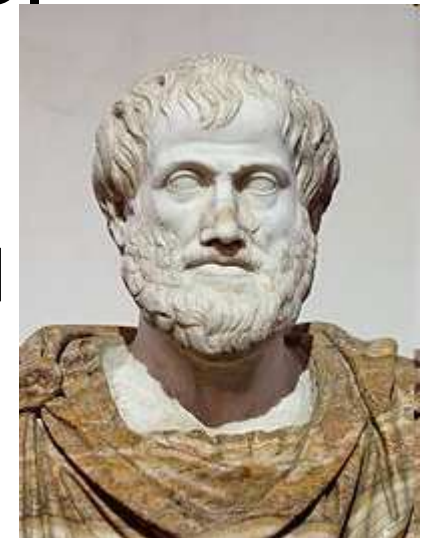
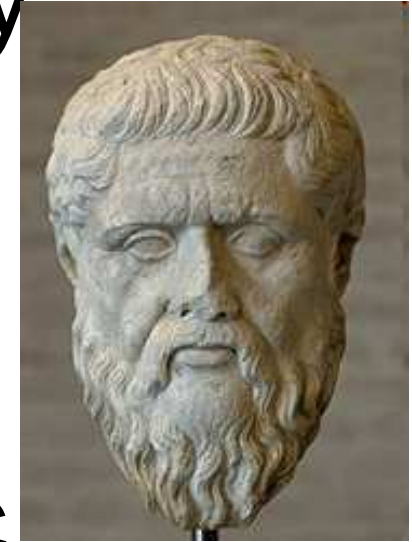


# Overview

- History and Persons
- Foundations of Einstein-Cartan-Evans (ECE) Theory
- Dynamic Sector of ECE Theory
  - Cosmology
- Electromagnetic Sector of ECE Theory
  - Atomic Resonance
  - Vacuum Engineering

# Ancient Natural Philosophy

- Platon, 428-348 B.C.
  - Ideas (abstraction from phenomena)
  - Atomism (geometrical bricks)
- Aristoteles (Aristotle), 384-322 B.C.
  - Natural philosophy
  - Founder of Formal Logic
  - Primary philosopher of ancient world
  - Predominant in mediaeval times



# Modern Age I

- Nicolaus Copernicus, 1473-1543

- astronomer
- heliocentric system (hypothesis)

- Johannes Kepler, 1571-1630

- astronomer
- 3 Keplerian laws (elliptic orbits)
- Foundation of optics



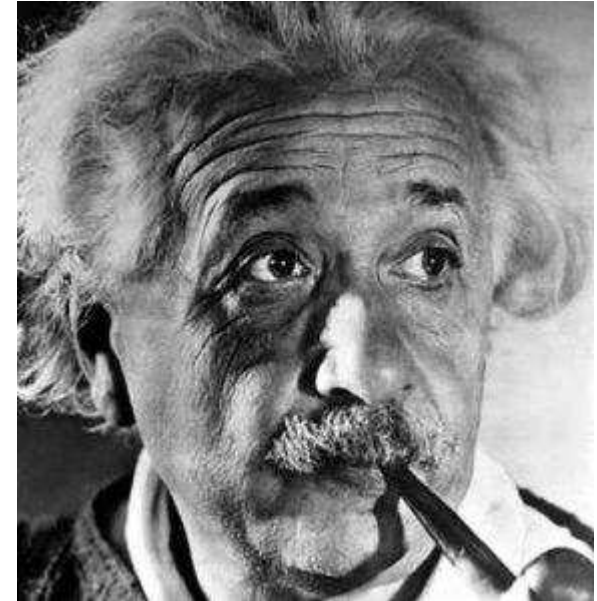
# Modern Age II


- Galileo Galilei, 1564-1642
  - Astronomer and physicist
  - Experimental discovery of laws of motion (kinematics)
- Isaac Newton, 1643-1726
  - Newtonian laws of motion
  - Gravitational law
  - Infinitesimal calculus (with Leibniz)
  - Foundation of modern mathematical physics



# 20th Century

- 1905 – Einstein's Special Relativity
- 1915 – Einstein's General Relativity
- 1920-30 – Quantum Mechanics
  - Based on Special Relativity
- 1940+ – Quantum Field Theory
  - Not reconcilable with General Relativity
- 2003 – Einstein-Cartan-Evans Theory





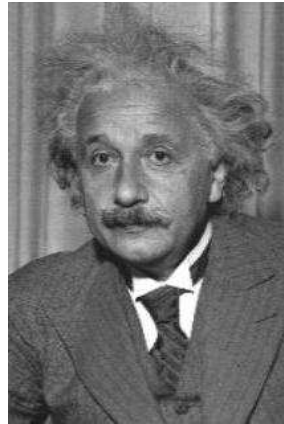
# What's the problem with contemporary theoretical physics?

- Einstein's Equivalence principle and general covariance principle is only applicable to mechanics
- Quantum mechanics of Heisenberg/Schrödinger is non-relativistic
- Dirac equation is compatible with special relativity only
- Quantum electrodynamics and other advanced quantum theories not reconcilable with general relativity
- String theory cannot be tested and cannot be applied to any practical problem („pre-Baconian“, medieval philosophy)
- *Solution*: try new approach on principles of Francis Bacon (1561-1626) (knowledge led by experiment, simple explanations)



# Einstein-Cartan-Evans (ECE) Unified Field Theory

- Einstein  
(1879-1955)
- Cartan  
(1869-1951)
- Evans  
(1950)





# Élie-Joseph Cartan



- ...was a French Mathematician (1869 - 1951)
- ...held posts at Montpellier, Lyon, and (1912–40) the Sorbonne
- ...becoming one of the most original mathematicians of his time
- ...greatly developed the theory being important for modern physics:
  - Lie groups
  - spinors
  - analysis on differentiable manifolds

# Myron Wyn Evans



- born in 1950 in Wales/GB, earned a B.Sc. and a Ph.D. in Chemistry / Univ. of Wales Aberystwyth
- 1978: awarded the Harrison Memorial Prize by The Royal Society of Chemistry
- 1979: awarded the Meldola Medal Prize by The Royal Society of Chemistry and a Junior Research Fellow at Wolfson College, Oxford, Fellow of the University of Wales
- he served briefly on the faculty of the Department of Physics at the University of North Carolina at Charlotte but resigned.
- early 1990ies: developed  $O(3)$  electrodynamics,  $B(3)$  field theory
- spring of 2003: Einstein Cartan Evans (ECE) field theory, published in 6 monographs
- 2005: Appointed by Queen Elizabeth II to the British Civil List (comparable to Nobel Prize)
- 2008: Gold medal of Telesio Galilei Academy



# AIAS: Alpha Institute for Advanced Study

- Virtual global institute
  - interdisciplinary group
  - about 60 engineers and scientists worldwide
  - President: M. W. Evans
- Mission
  - Development of Grand Unified Field Theory (GUFT) and applications in electrodynamics and mechanics
- Member of Telesio Galilei Academy (TGA)
  - Aiming at support and encouragement in the quest for scientific truth
  - Catalyzing research in the foundations of physics, chemistry, biology and, eventually, in all other scientific fields

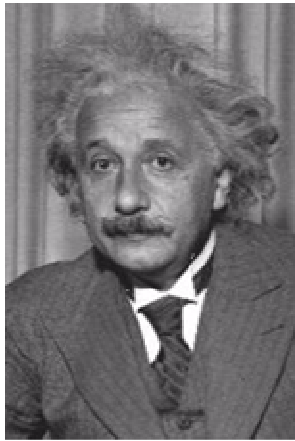


# AIAS Comparitive Impact Table

- Web site access hits June 2009

Institute / Department / Group	Average Hits per Month
1 Alpha Inst. Advanced Study (AIAS)	267,686
2 Real Climate – Climate Science from Climate Scientists	150,000
3 College Eng Sacramento State	43,803
4 Bristol School of Chemistry	18,206
5 Michigan Architectural Eng	16,135
6 YSU Ohio Engineering	10,993
7 Missouri Scanning El. Mic.	9,457
8 Russian Centre for Drug Chemistry	6,975
9 Physics Utah	4,317
10 North Texas Chemistry	3,607

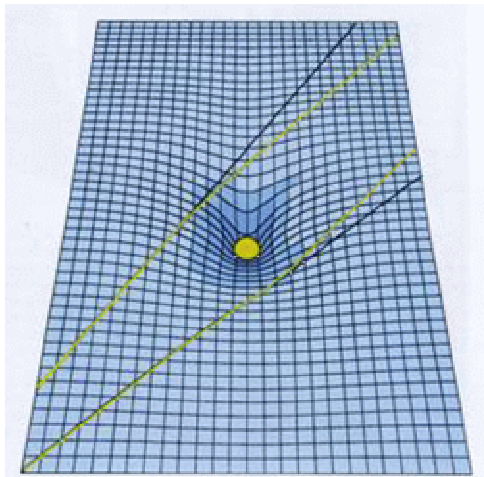
# Einstein's and Cartan's Concepts



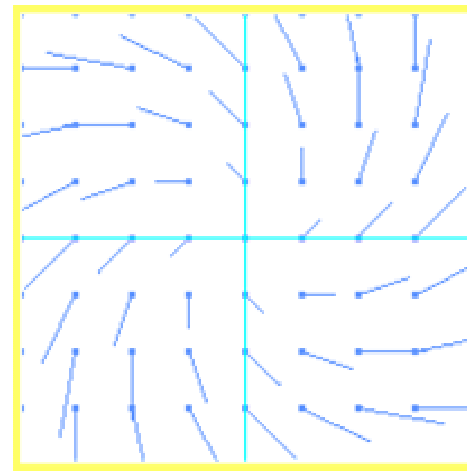
Einstein (1915)  
Riemannian  
Curvature



Cartan  
(ca. 1922)  
Torsion



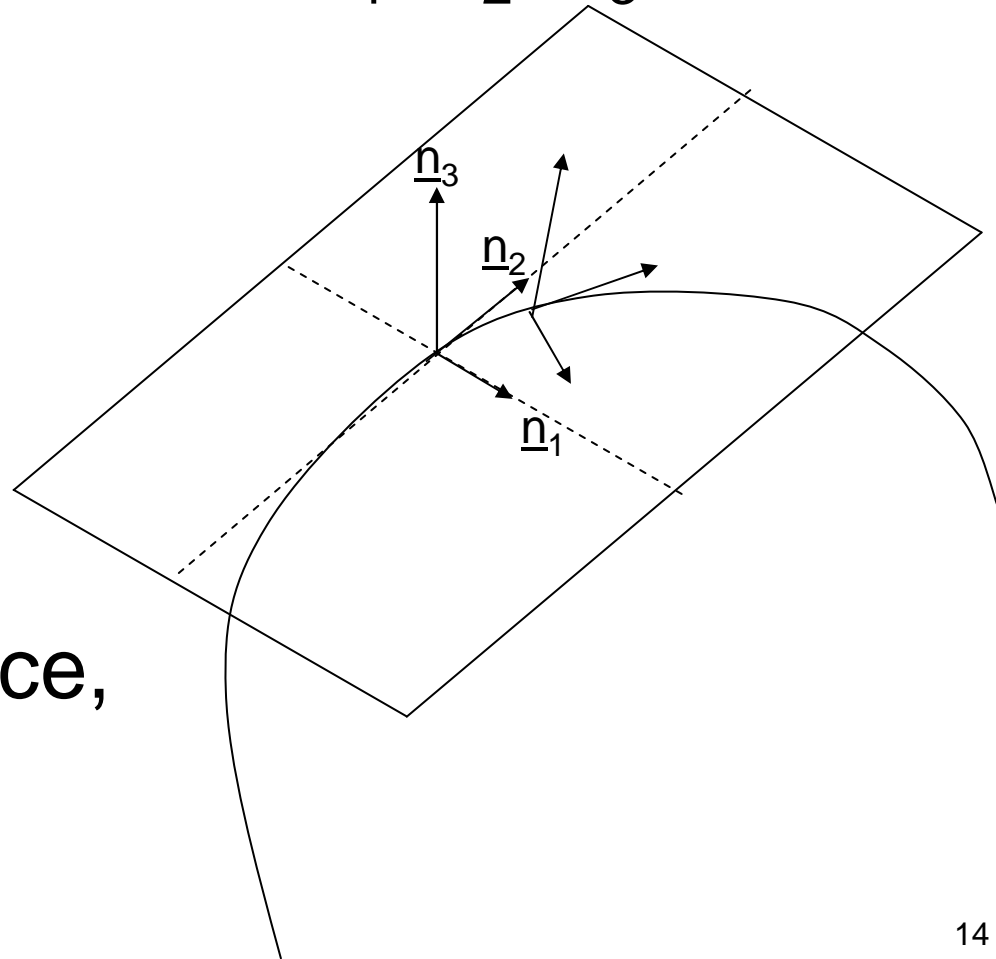
Gravitation



Elektromagnetismus

# Definition of Torsion

- Frenet frame („Dreibein“  $\underline{n}_1, \underline{n}_2, \underline{n}_3$ ) at each point of a curve
- $\underline{n}_3' = -k \underline{n}_2 + \kappa \underline{n}_1$
- $k$ : curvature
- $\kappa$ : torsion
  
- Rotation of surface, „rotating frame“





# 3 Axioms of ECE Theory

- 4-potential  $A$  proportional to Cartan tetrad  $q$   
( $a$ : index of tangent space)
  - $A^a = A^{(0)} q^a$
- Electromagnetic/gravitational field proportional to torsion
  - $F^a = A^{(0)} T^a$
- Energy-momentum density proportional to scalar curvature (Einstein)
  - $R = -k T_{e-m}$



# ECE Field Equations of Electro-Magnetism

$$\nabla \cdot \mathbf{B} = \mu_0 \rho_{eh} = \rho_{eh}' = 0 \quad \text{Gauss Law}$$

$$\nabla \times \mathbf{E} + \frac{\partial \mathbf{B}}{\partial t} = \mu_0 \mathbf{j}_{eh} = \mathbf{j}_{eh}' = 0 \quad \text{Faraday Law of Induction}$$

$$\nabla \cdot \mathbf{E} = \frac{\rho_e}{\epsilon_0} \quad \text{Coulomb Law}$$

$$\nabla \times \mathbf{B} - \frac{1}{c^2} \frac{\partial \mathbf{E}}{\partial t} = \mu_0 \mathbf{J}_e \quad \text{Ampère - Maxwell Law}$$

- Identical to Maxwell equations, but valid in a curved/twisted spacetime
- Differences made up by appearance of „spin connections“ in potentials of E and B fields



# ECE Field Equations of Dynamics

$$\nabla \cdot \mathbf{h} = 4\pi G \rho_{mh} = 0 \quad (\text{Equivalent of Gauss Law})$$

$$\nabla \times \mathbf{g} + \frac{1}{c} \frac{\partial \mathbf{h}}{\partial t} = \frac{4\pi G}{c} \mathbf{j}_{mh} = 0 \quad \text{Gravito - magnetic Law}$$

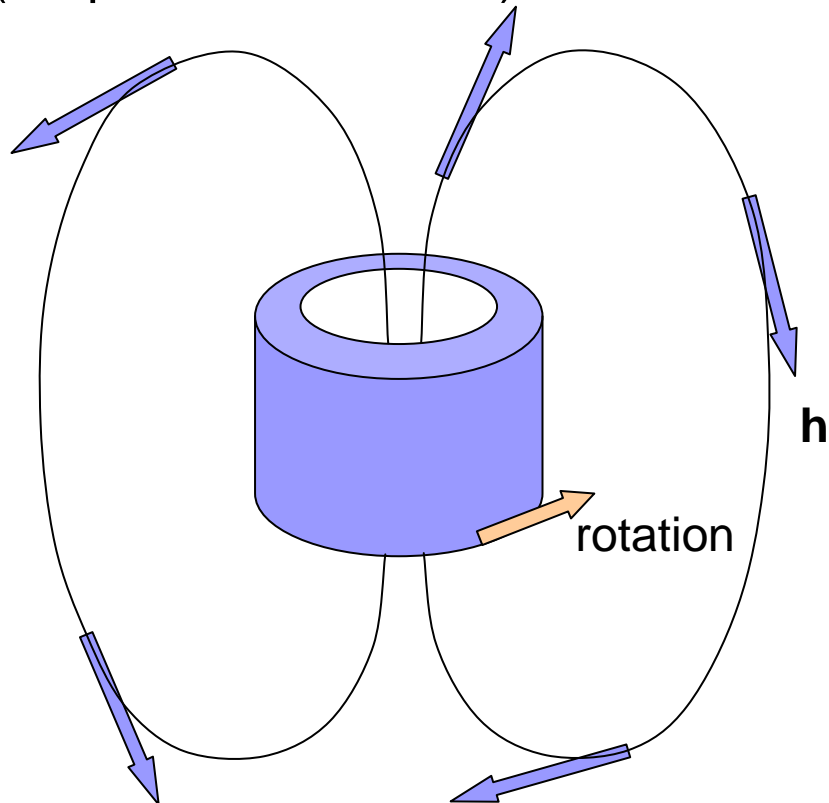
$$\nabla \cdot \mathbf{g} = 4\pi G \rho_m \quad \text{Newton's Law (Poisson equation)}$$

$$\nabla \times \mathbf{h} - \frac{1}{c} \frac{\partial \mathbf{g}}{\partial t} = \frac{4\pi G}{c} \mathbf{J}_m \quad (\text{Equivalent of Ampère - Maxwell Law})$$

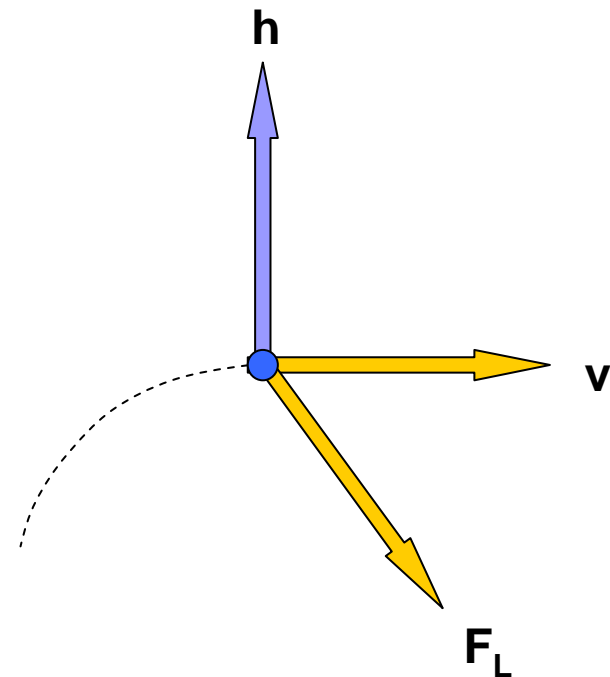
- Identical to electromagnetic equations within constant factors
- Only 1 law (Newton) generally known today

# Examples of ECE Dynamics

Realisation of gravito-magnetic field  $\mathbf{h}$   
by a rotating mass cylinder  
(Ampere-Maxwell law)



Detection of  $\mathbf{h}$  field by  
mechanical Lorentz force  $\mathbf{F}_L$   
 $\mathbf{v}$ : velocity of mass  $m$





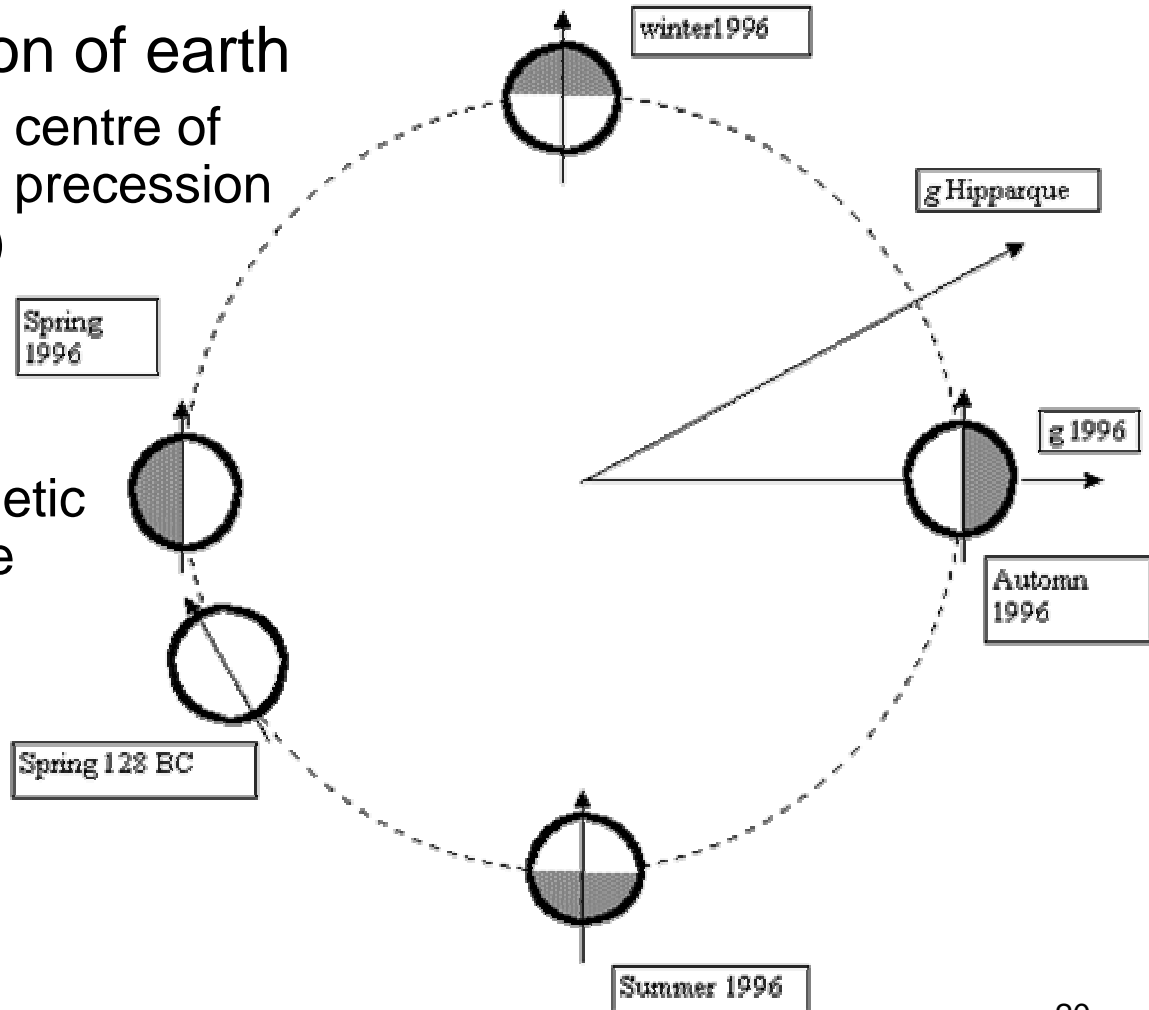
# Experimental Verification of Gravito-Magnetic Field I

- Gravito-magnetic precession of a satellite
  - Experiment Gravity Probe B
  - Funding ceased because experiment failed to detect anything
  - Experimentally found variation in precession is below limit of measurement (0.1 arcsec/year)
  - ECE: calculated 0.099 arcsec/year
  - Reason: gravito-magnetic field of earth

# Experimental Verification of Gravitomagnetic Field II

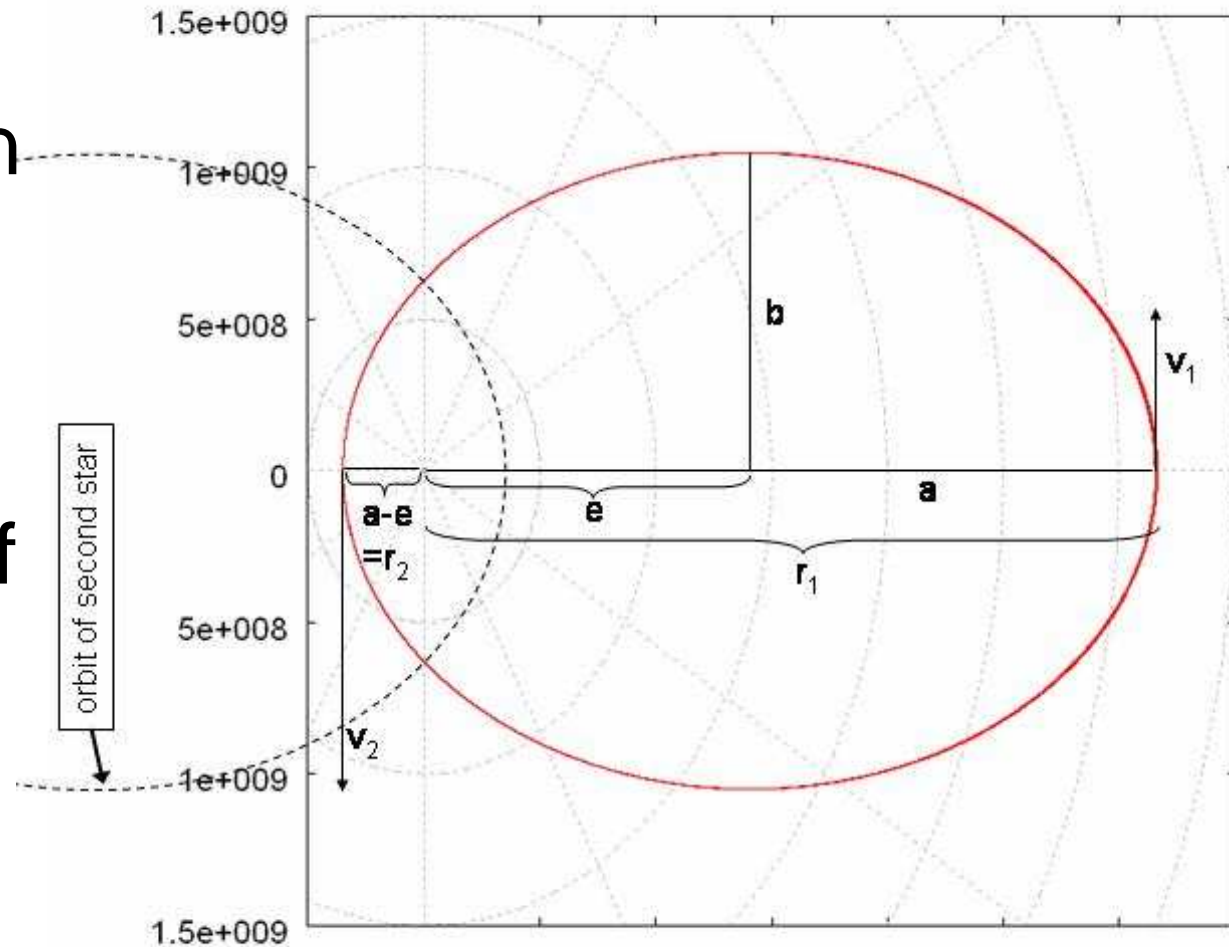
## ■ Equinoctial precession of earth

- Motion of sun around centre of solar system leads to precession (26,000 years period)
- Classical and Einstein: no explanation
- Effect of gravitomagnetic field of galactic centre
- ECE: Torque of spacetime due to constant angular momentum of centre of galaxy



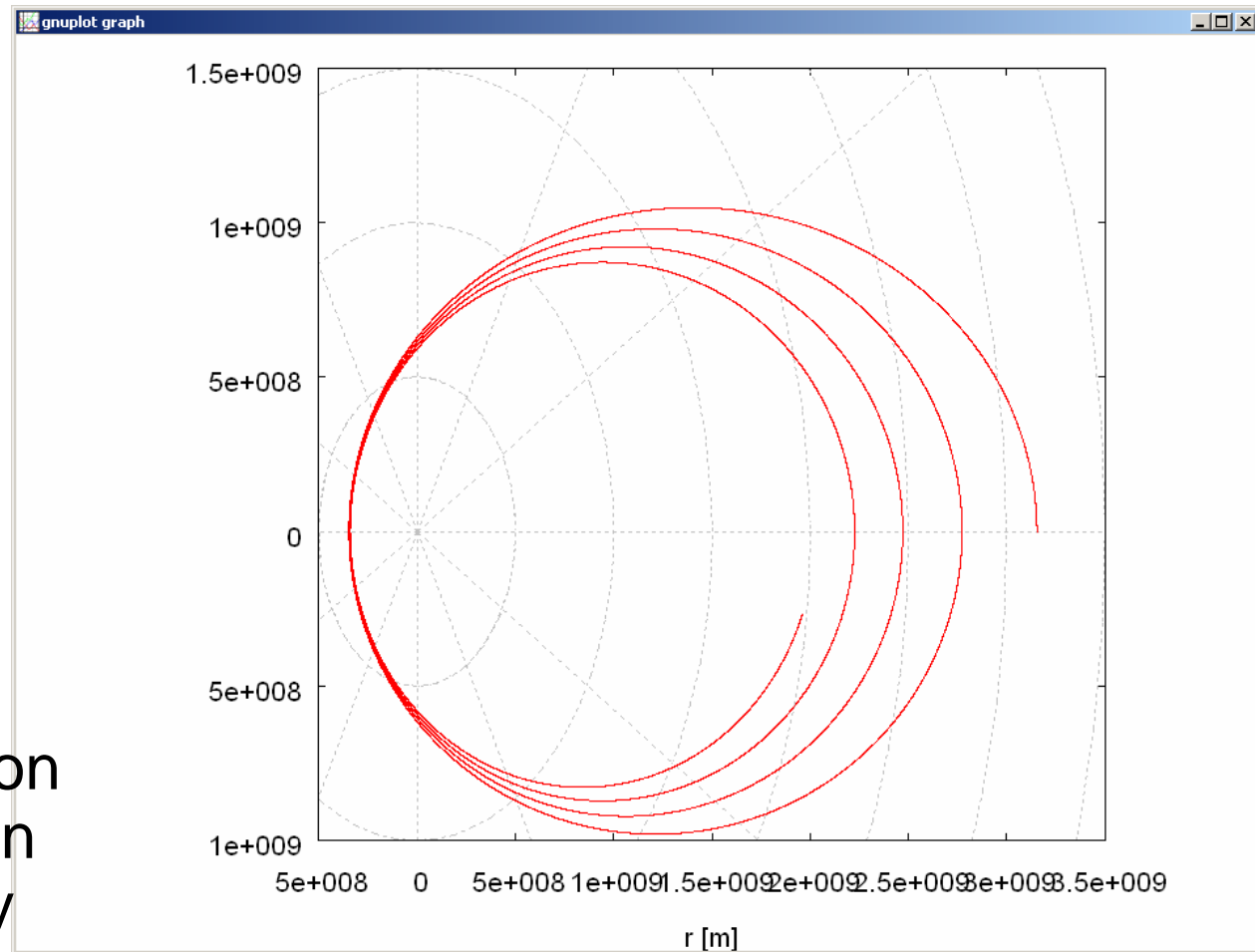
# Double Star Systems

- Calculation only for one star needed because of symmetry



# Hulse-Taylor Pulsar, Orbit

- 1 pulsar,  
1 normal  
star
- (Effects shown  
strongly  
enhanced)
- Explanation:  
decreasing  
orbit due to  
grav. Radiation
- ECE: no radiation  
loss, explanation  
by orbital theory





# Elliptic Galaxy NGC1300 (Hubble Telescope)

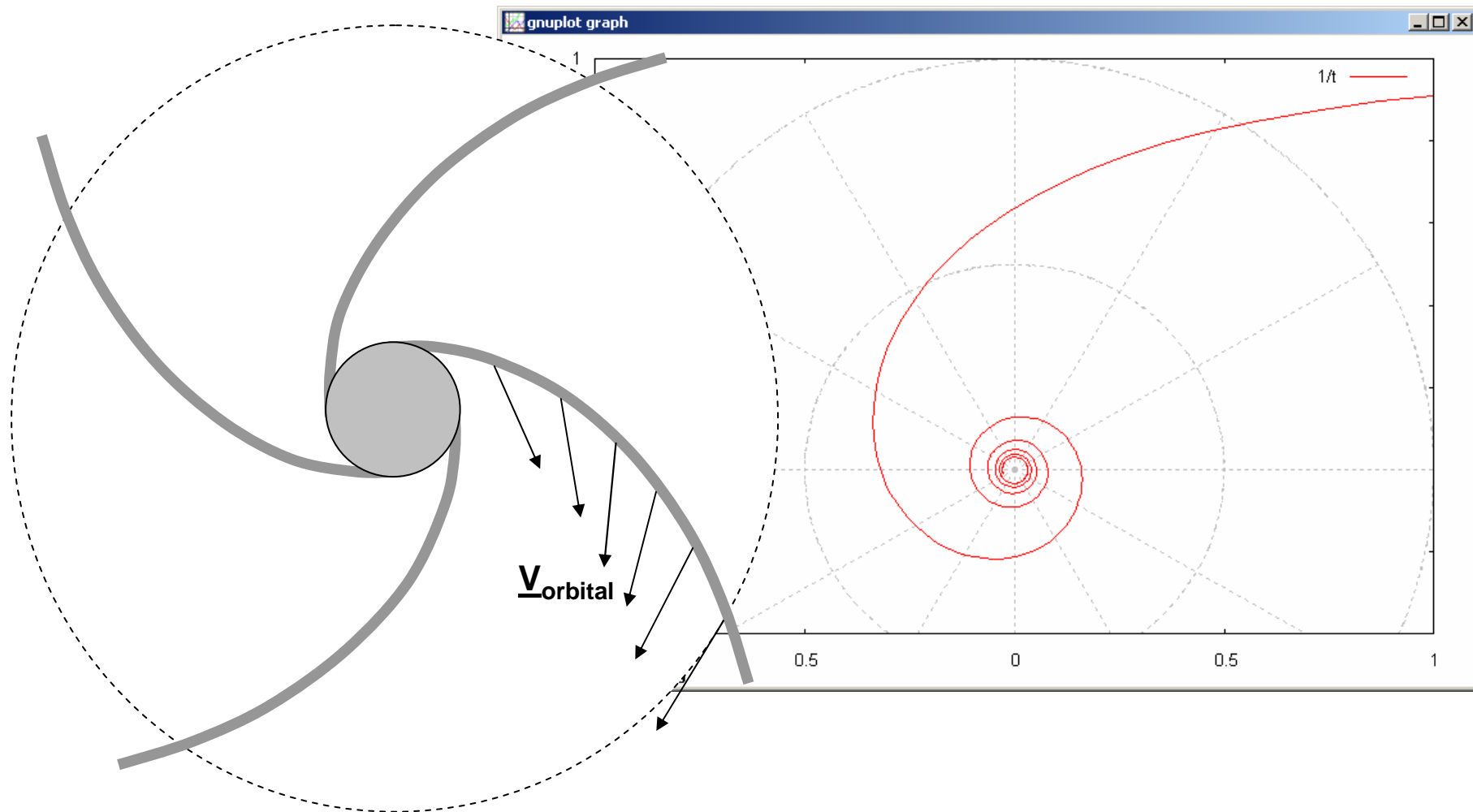
- Central Bulge and Spiral Arms



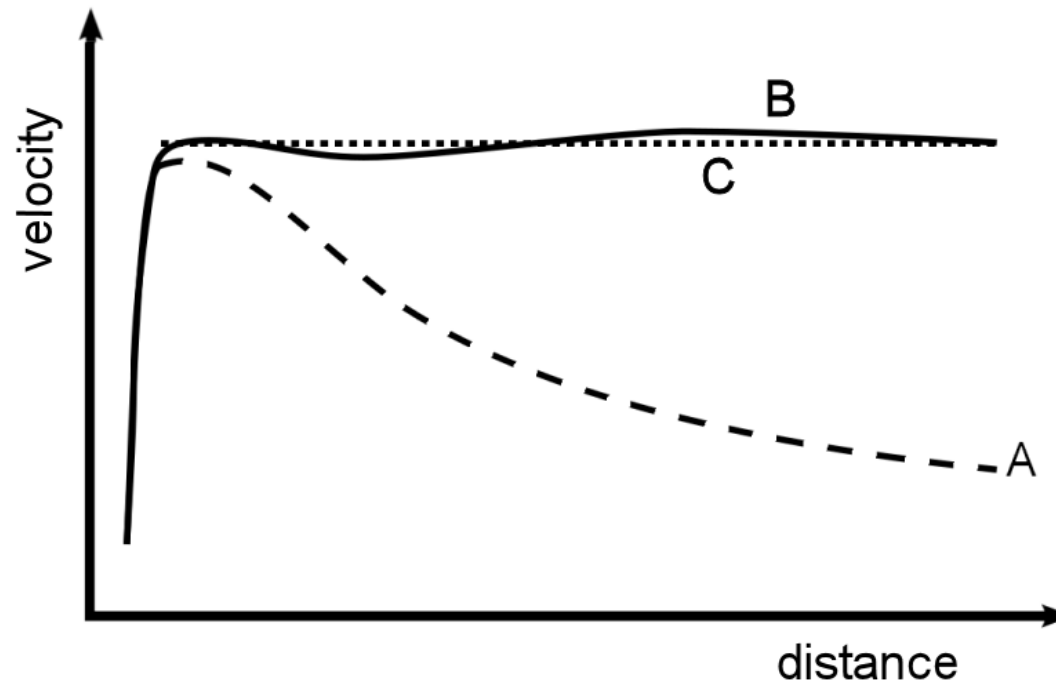
# Spiral Galaxy M101 (Hubble Telescope)



# Motion of Stars in Spiral Galaxies



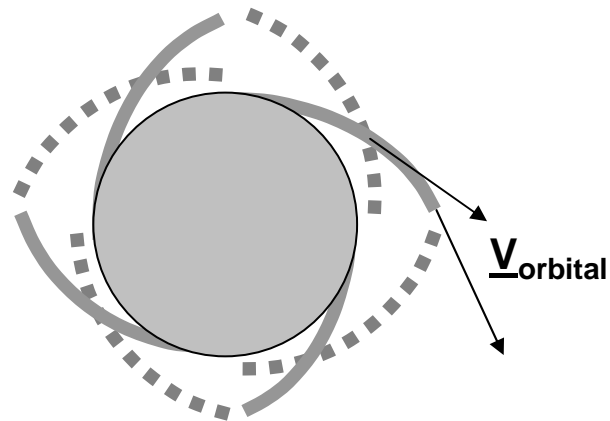
# Star Velocities in Galaxies



- A: Newton Theory
- B: Experiment
- C: ECE Theory

# Spiral Galaxy Development According to Newton Theory

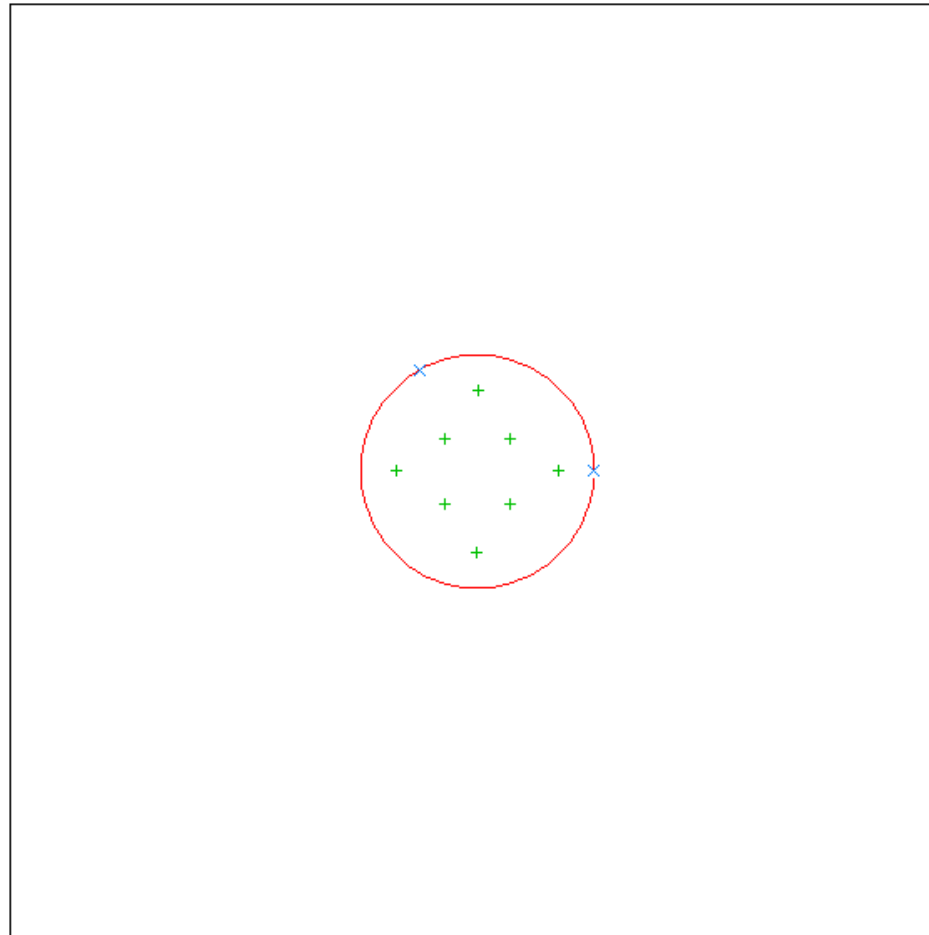
- No evolvment of arms
- Stars fall back into central bulge



# M101 With Adopted Log. Spirals

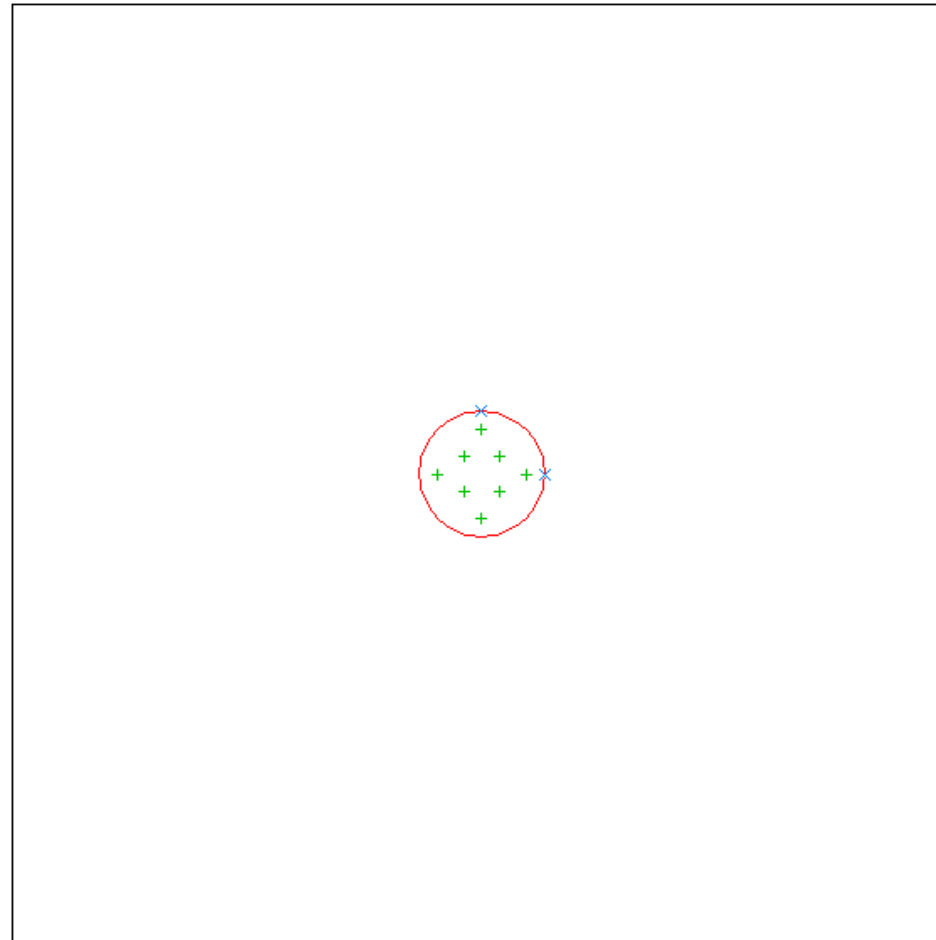


# Galaxy Simulation with Newton Model





# Galaxy Simulation with ECE Model





# Where do Stars Come From?

- Usual assumption: from outer parts of galaxies
- Problem: youngest stars are found near to the galactic centres
  - There should be the oldest because attraction of the „black hole“
- Solution by ECE theory: Stars are produced in the centre by spin connection resonance



# Cosmological model of ECE

- Angular momentum of a galaxy is conserved
- Structure and motion determined by angular momentum
- Field equations can be formulated in terms of angular momentum

# ECE Field Equations in Angular Momentum Formulation

$$\nabla \cdot \mathbf{S} = \frac{1}{2} c V \rho_{hm} = 0 \quad (\text{Equivalent of Gauss Law})$$

$$\nabla \times \mathbf{L} + \frac{1}{c} \frac{\partial \mathbf{S}}{\partial t} = \frac{1}{2} V \mathbf{j}_m = 0 \quad \text{Gravito - magnetic Law}$$

$$\nabla \cdot \mathbf{L} = \frac{1}{2} c V \rho_m = \frac{1}{2} mc \quad \text{Newton's Law (Poisson equation)}$$

$$\nabla \times \mathbf{S} - \frac{1}{c} \frac{\partial \mathbf{L}}{\partial t} = \frac{1}{2} V \mathbf{J}_m = \frac{1}{2} \mathbf{p} \quad (\text{Equivalent of Ampère - Maxwell Law})$$

- **S**: spin angular momentum
- **L**: orbital angular momentum
- Analogy to microcosmos (electrons and atomic nuclei)
- None of these laws is known in standard theory



# Black Holes

- Stephen Crothers found that Schwarzschild's solution of Einstein's equation is wrongly interpreted
  - There is no event horizon
  - There is no singularity
  - There are only supermassive stars
- ECE supports this view
  - There are no singularities in physics
- Experiment: nobody has observed a black hole directly!



# Dark Matter

- Standard physics assumes that more than 90% of matter are of unknown type
  - no radiation interaction, „dark matter“
- What the hell do we know then from the universe???
- ECE theory has explained the laws of the universe without such assumptions



# Big Bang

- By observed red shift of star light it is assumed that the universe is expanding
  - The farther away a star, the higher the red shift
- Extrapolation backward in time does NOT lead to a universe concentrated in a single point
  - An „inflationary phase“ must be assumed AD HOC
  - There is no other occurrence of such an effect in physics
- Experiments also show blue shifts instead of red shifts
  - There are contractions and expansions in the universe simultaneously

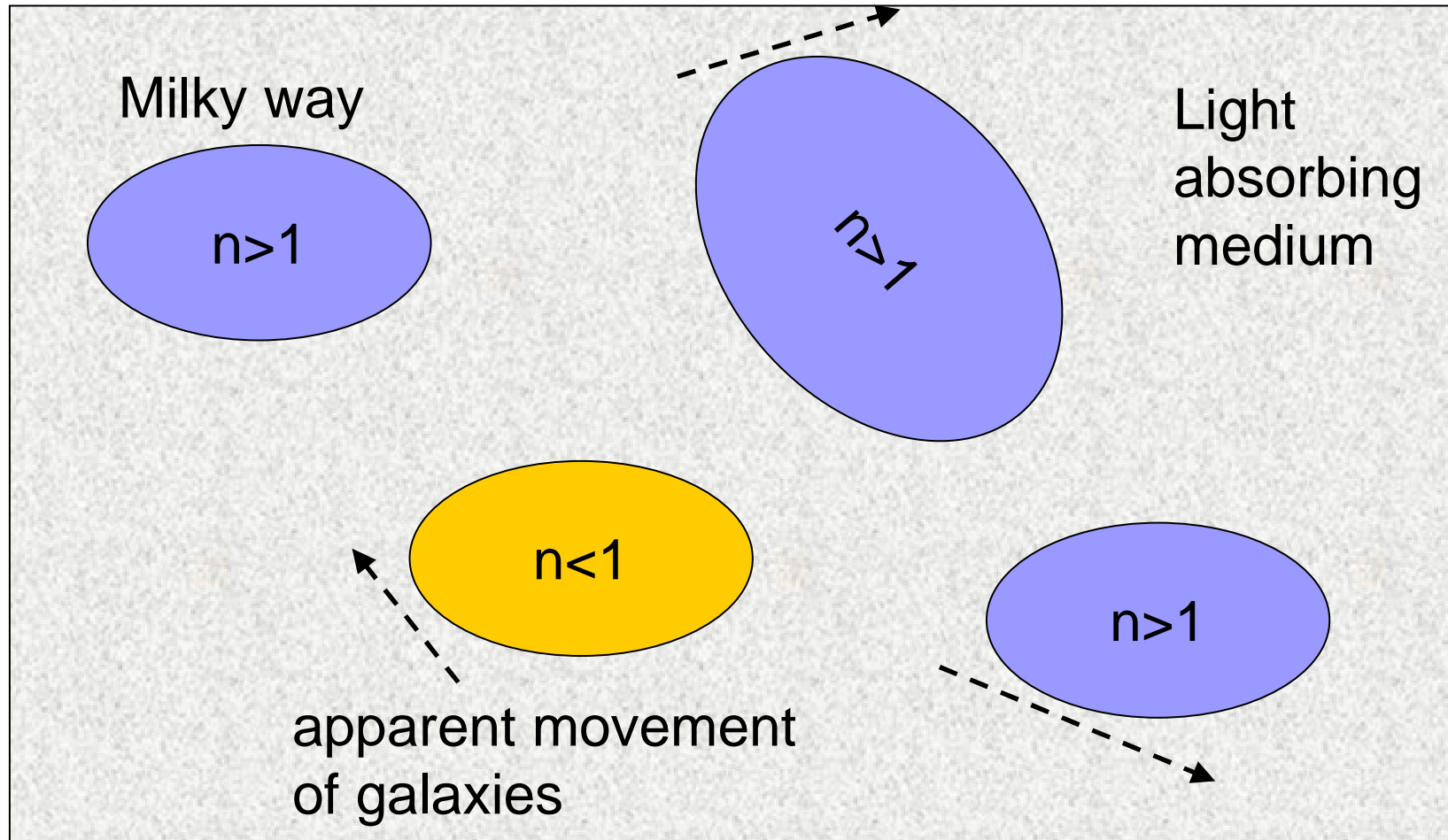


# Cosmological Consequences

- ECE: Space may have optical properties
  - Refraction, absorption
- Interaction of gravitation and electromagnetism leads to variations in refractive properties in large parts of the universe
  - $c \rightarrow c/n, n>1$ : red-shift of optical spectra
  - $c \rightarrow c/n, n<1$ : blue-shift also possible
- No evidence for expanding universe!
- No evidence for Big Bang!



# Model of the Universe





# Electromagnetic Sector of ECE Theory

- Force fields depend on potentials ( $\Phi$ ,  $\mathbf{A}$ ) AND spin connections ( $\omega_0$ ,  $\boldsymbol{\omega}$ )

$$\mathbf{E} = -\frac{\partial \mathbf{A}}{\partial t} - \nabla \Phi - \omega_0 \mathbf{A} + \boldsymbol{\omega} \Phi$$

$$\mathbf{B} = \nabla \times \mathbf{A} - \boldsymbol{\omega} \times \mathbf{A}$$

- Mechanical rotation creates electromagnetic field (for example Faraday disk generator)



# Spin Connection Resonance

- Electric field ( $A=0$ ):

$$E = -(\nabla + \omega)\Phi$$

- Coulomb Law:

$$\nabla \cdot E = -\rho/\epsilon_0$$

- Resonant Coulomb law for potential

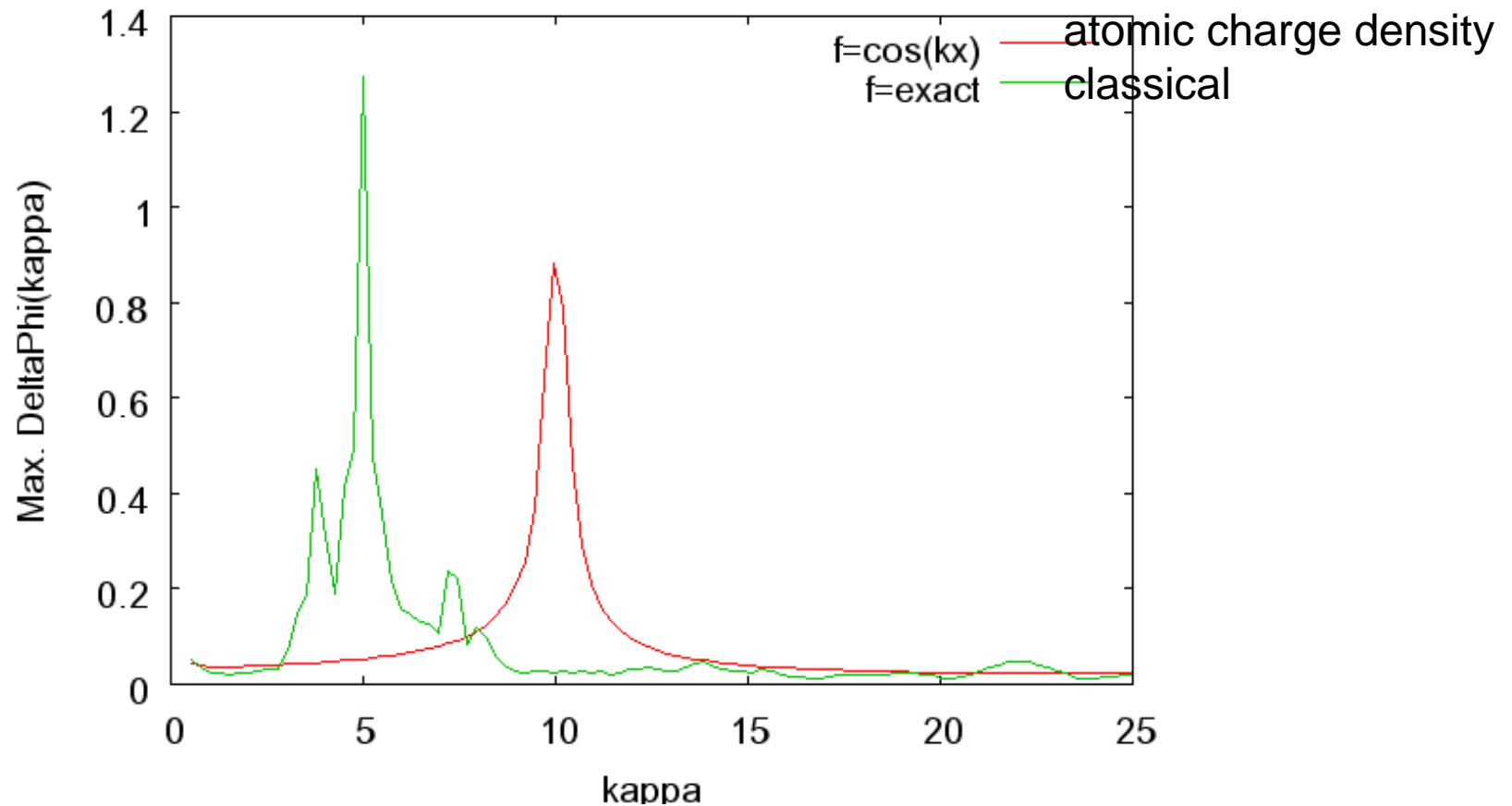
$$\Delta\Phi + \omega \cdot \nabla\Phi + (\nabla \cdot \omega)\Phi = -\rho/\epsilon_0$$

- Equation for forced oscillation in  $\Phi$

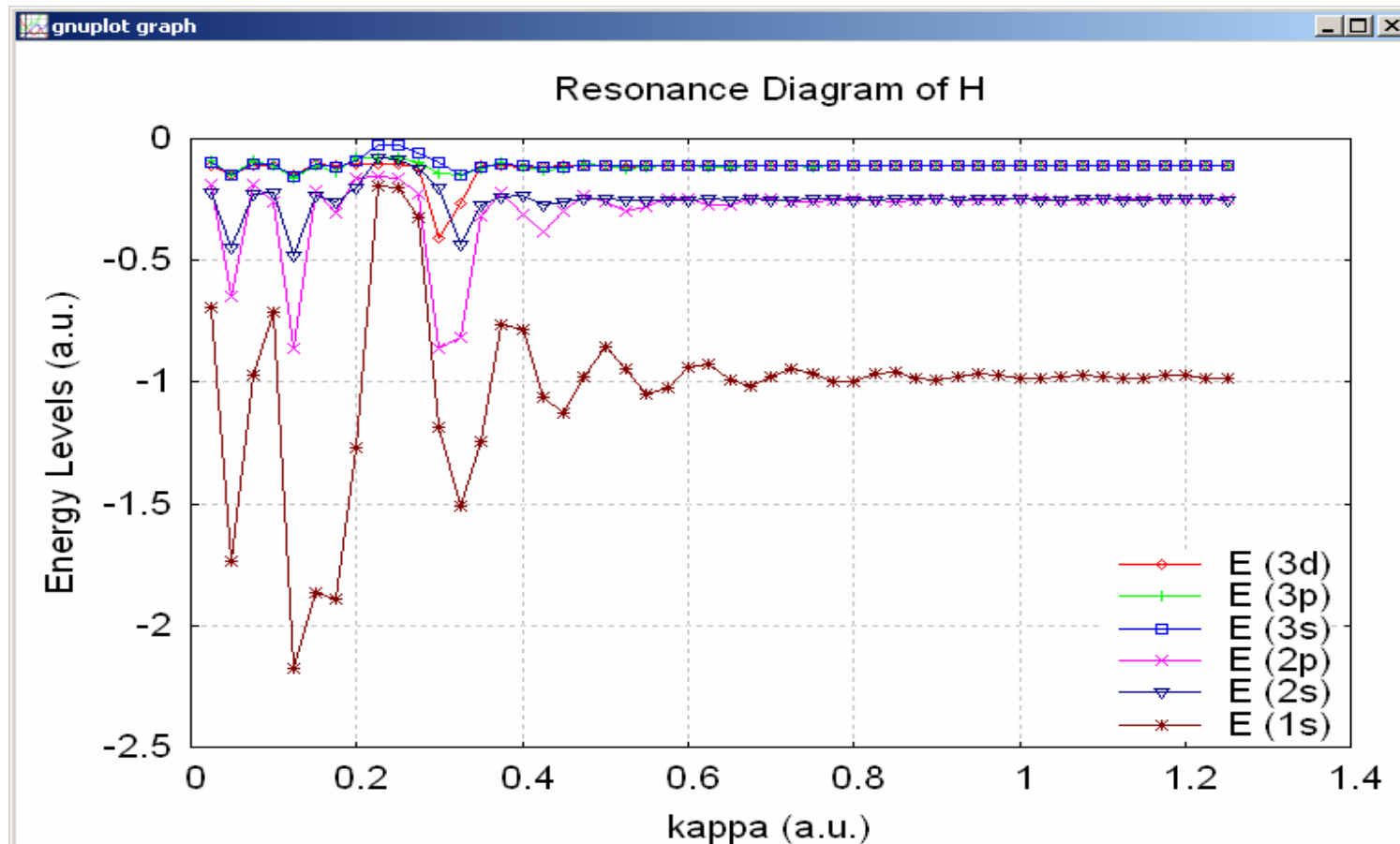
- Euler-Bernoulli Resonance, 1739/1742

# Spin Connection Resonance in Atomic Spectra

Resonance Diagram



# Space-Time Resonance in Atomic Spectra of H

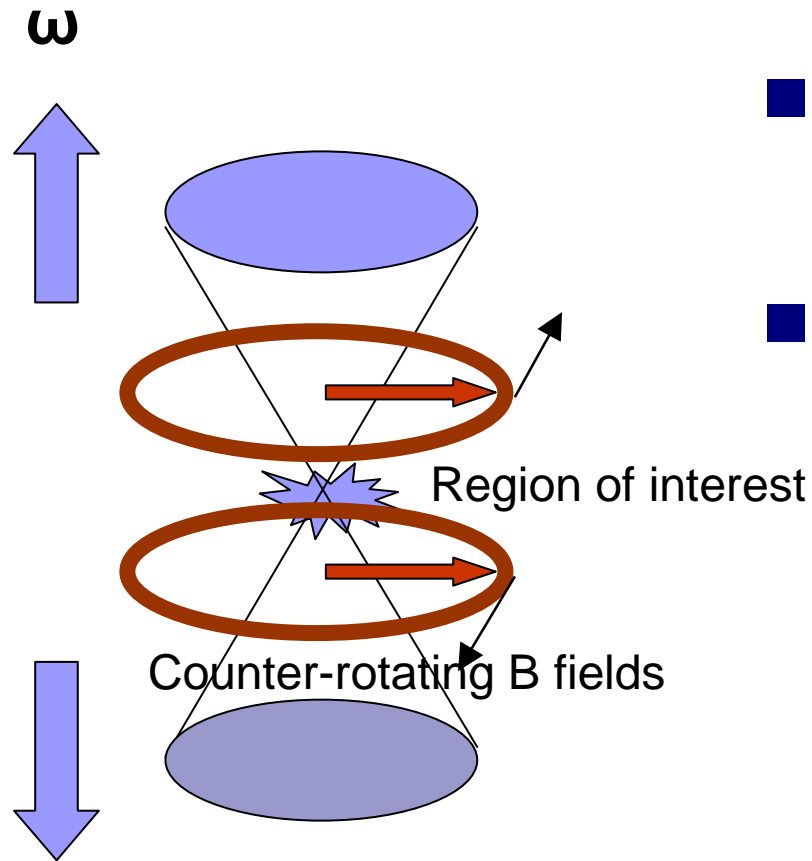




# Energy Density of Vacuum

- Classical/Einstein
  - Empty space
  - Energy density:  $< 10^{-9} \text{ J/m}^3$
- Quantum vacuum
  - Filled with „virtual particles“
  - Energy density:  $> 10^{60} \text{ J/m}^3$  !!!
- ECE: non-empty vacuum in classical limit
  - Energy transfer from/to vacuum possible
  - Realizeable by resonance enhancement of Lamb shift

# Spin Connection Resonance in Electrical Engineering



- Transfer of energy from vacuum
- Resonance condition:  
 $\text{Div } \omega \neq 0$



# Antigravity

- Field equations for dynamics and electromagnetism are the same
  - All e-m effects corresponds to identical gravitational effects
  - However: difference in strength by 21 orders of magnitude!
- Way to antigravity
  - Enhance potential by spin connection resonance by 21 orders
  - E field (and therefore g field) can have both signs
  - Counter-gravitation is possible





# Summary: Einstein-Cartan-Evans Theory

- Explanation of electro-magnetism and dynamics on geometrical basis
- Unification with geometrical theory of gravitation (Einstein)
- Quantum mechanics and nuclear forces derived from ECE theory
- -> Unification of all forces of nature



# Summary: Achievements of ECE Theory

- Quantum mechanics
  - put on deterministic basis
  - interaction of matter with vacuum explained
- Electrodynamics
  - curvature of space incorporated in Maxwell equations
  - new model of electrical engineering / new applications
- Dynamics and cosmology
  - Newtonian laws of motion expanded
  - new explanation of galaxies and the universe